

CLAIMS

What is claimed is:

1. A toilet fill valve, comprising:
 - a water inlet;
 - a first water outlet configured to supply water to a toilet tank; and
 - a bowl fill valve having a bowl fill valve inlet and a bowl fill valve outlet, the bowl fill valve inlet being operatively coupled to the water inlet, the bowl fill valve being integrated with a body of the toilet fill valve, and the bowl fill valve being configured to supply an adjustable flow of water out the bowl fill outlet for filling a toilet bowl during a flush cycle of a toilet.
2. The toilet fill valve of claim 1, further comprising:
 - an actuating arm coupled to a float, the actuating arm extending in an orthogonal direction relative to a longitudinal axis of the toilet fill valve; and
 - the bowl fill valve extending in an orthogonal direction relative to the longitudinal axis of the toilet fill valve, wherein the actuating arm is radially offset relative to the bowl fill valve, thereby preventing an interference with the bowl fill valve and a translational stem extending from the float to a free end of the actuating arm.
3. The toilet fill valve of claim 1, wherein the bowl fill valve further comprises a number of biased positions.
4. The toilet fill valve of claim 1, wherein the bowl fill valve is a type of valve selected from the group consisting of a ball valve, a gate valve, a globe valve, a plug valve, a diaphragm valve, a butterfly valve, a needle valve, a sliding gate, a quick turn valve, and a knife valve.

5. The toilet fill valve of claim 1, wherein the bowl fill valve is a ball valve.
6. The toilet fill valve of claim 1, wherein the bowl fill valve is a butterfly valve.
7. The toilet fill valve of claim 1, wherein the bowl fill valve is a needle valve.
8. A toilet tank with an adjustable bowl fill water flow, comprising:
 - a toilet fill valve having a water inlet coupled to a water source outside of the toilet tank and a water outlet directing an flow of water into the toilet tank;
 - a bowl fill valve having a bowl fill valve inlet and a bowl fill valve outlet, the bowl fill valve inlet being operatively coupled to the water inlet, the bowl fill valve being integrated with a body of the toilet fill valve;
 - a tube coupling the bowl fill valve outlet to an overflow tube of the toilet tank, wherein a flow of water into the overflow tube is directed to a toilet bowl; and
 - the bowl fill valve being configured to supply an adjustable flow of water out the bowl fill outlet through the tube and into the overflow tube for filling the toilet bowl during a flush cycle of a toilet, the bowl fill valve preventing a creation of a pressure head in the tube.

9. A method for adjusting a bowl fill water flow during a flush cycle in a toilet, comprising the steps of:

determining a water level in a toilet bowl when the toilet bowl is full of water;

adjusting a bowl fill valve integrated with a toilet fill valve in the toilet to a predefined position, thereby adjusting a flow of water that refills the toilet;

flushing the toilet;

determining if the flow of water into the toilet bowl is adequate to refill the toilet bowl during the flush cycle; and

repeating the steps of adjusting the bowl fill valve, flushing the toilet, and determining if the flow of water into the bowl is adequate to refill the toilet bowl until the toilet bowl is substantially filled during a flush cycle.

10. The toilet fill valve of claim 9, further comprising preventing a creation of a pressure head in a tube that is coupled between an outlet of the bowl fill valve and an overflow tube in the toilet by adjusting the bowl fill valve integrated with the toilet fill valve .